AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently Amended) A detection apparatus for detecting droplets discharged from discharge nozzles provided in a discharge head, comprising:

a light emitter for emitting [[a]] detection light;

a receiver for receiving said detection light; and

a moving device for moving said discharge head in a direction of movement to intersect ~~the~~ an optical path of said detection light, wherein

said discharge nozzles are all aligned in an alignment direction parallel to said direction of movement of said discharge head,

said moving device moves said discharge head ,

said discharge nozzles aligned in said alignment direction discharge said droplets at a same time and at a predetermined time interval, and when

D is the diameter of a beam of said detection light,

d is the diameter of said droplets,

L is the distance between the discharge nozzles in the direction of movement of said discharge head, and

H is the relative distance that said discharge head and said detection apparatus move from when a discharge nozzle discharges one droplet to when said discharge nozzle discharges the next droplet,

settings are adjusted so as to satisfy the conditions

$D/2 + d/2 \leq L$, and $H \leq D$

to place only one droplet discharged from each discharge nozzle onto the optical path of said detection light.

2. (Original) A detection apparatus according to claim 1, wherein in a case where the diameter of the beam of said detection light is greater than the diameter of a measurement region of said receiver, D is the diameter of said measurement region.

3. (Original) A detection apparatus according to claim 1, further comprising a control device for resetting at least one of the values of said D, d and H.

4. (Original) A detection apparatus according to claim 1, wherein the number of said discharge nozzles can be optionally set.

5. (Currently Amended) A detecting method for a droplet discharge apparatus having a discharge head with a plurality of discharge nozzles all aligned in a predetermined direction for discharging droplets, comprising :

emitting [[~~a~~]]detection light toward a predetermined receiver;

moving said discharge head in a direction of movement parallel to said predetermined direction,

discharging said droplets from said discharge nozzles at a same time and at a predetermined time interval;

detecting the amount of light received by said receiver due to said droplets passing through the optical path of said detection light; and

when verifying the discharge state of the discharge nozzles based ~~an~~ on the detected result, adjusting settings so as to satisfy the conditions to place only one droplet discharged from each discharge nozzle onto the optical path of said detection light,

$D/2 + d/2 \leq L$, and $H \leq D$, where

D is the diameter of the beam of said detection light,

d is the diameter of said droplets,

L is the distance between the discharge nozzles in the direction of movement of said discharge head, and

H is the distance that said discharge head moves from when a discharge nozzle discharges one droplet to when said discharge nozzle discharges the next droplet.

6. (Currently Amended) A droplet discharge apparatus comprising:

a discharge head with a plurality of discharge nozzles for discharging droplets ;

a detection apparatus for detecting whether said droplets are discharged from said discharge nozzles; and

a control unit for performing predetermined processing for said discharge head based on the detection result of said detection apparatus,

wherein said detection apparatus comprises:

a light emitter for emitting [[~~a~~]]detection light;

a receiver for receiving said detection light from said light emitter; and

a moving device for moving said discharge head in a direction of movement to intersect ~~the~~ an optical path of said detection light, wherein

said discharge nozzles are all aligned in an alignment direction parallel to said direction of movement of said discharge head,

said moving device moves said discharge head in said direction of movement,

said discharge nozzles aligned in said alignment direction discharge said droplets at a same time and at a predetermined time interval, and when

D is the diameter of a beam of said detection light,

d is the diameter of said droplets,

L is the distance between the discharge nozzles in the direction of movement of said discharge head, and

H is the relative distance that said discharge head and said detection apparatus move from when a discharge nozzle discharges one droplet to when said discharge nozzle discharges the next droplet,

settings are adjusted so as to satisfy the conditions to place only one droplet discharged from each discharge nozzle onto the optical path of said detection light,

$D/2 + d/2 \leq L$, and $H \leq D$.

7. (Original) A droplet discharge apparatus according to claim 6, wherein the number of said discharge nozzles can be optionally set.

8. (Currently Amended) A droplet discharge method comprising:

a step of discharging droplets from a discharge head with a plurality of discharge nozzles all aligned in a predetermined direction for discharging droplets at a same time and at a predetermined interval;

a detection step of detecting whether said droplets are discharged from said discharge nozzles; and

a processing step of performing predetermined processing for said discharge head based on a detection result of said detection step,

wherein said detection step comprises:

radiating a detection light toward a predetermined receiver;

moving said discharge head in a direction of movement parallel to said predetermined direction,

discharging said droplets from said discharge nozzles at a predetermined time interval;

detecting the amount of light received in said receiver due to said droplets passing through the optical path of said detection light, and

when verifying the discharge state of the discharge nozzles based on the detected result, adjusting settings so as to satisfy the conditions to place only one droplet discharged from each discharge nozzle onto the optical path of said detection light,

$D/2 + d/2 \leq L$, and $H \leq D$, where

D is the diameter of the beam of said detection light,

d is the diameter of said droplets,

L is the distance between the discharge nozzles in the direction of movement of said discharge head, and

H is the distance that said discharge head moves from when a discharge nozzle discharges one droplet to when said discharge nozzle discharges the next droplet.

9. (Cancelled)

10. (Cancelled)